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ABSTRACT

This study was conducted to determine the relationship between teachers' experience and their perceptions of and reactions to problematic classroom situations. The purpose was to assist teacher educators to more adequately train beginning teachers who then would be better prepared to deal with problematic classroom situations. Subjects (N=49) were secondary teachers from the Southeast of the Netherlands: 25 inexperienced teachers with 0 to 3 years experience and 24 experienced teachers with more than 5 years of practice. Five simulated problematic classroom situations were shown on videotape, and teachers were asked to complete two questionnaires dealing with emotional stress reaction and the sense of self-efficacy. The data suggest that experienced teachers' reactions are characterized by more complexity than those of inexperienced teachers; experienced teachers produce more reaction-intentions and need more reaction time; both groups show no differences in their range of reactions and seem to react in a confrontive, friendly-directive or understanding-permissive way. Attributional differences of teachers appear to be related to situational cues, rather than to teachers' experience. (LL)

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**Inexperienced and Experienced Teachers' Differences in Reacting and
Attributing to Problematic Classroom Situations**

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Approaches To Research on Teacher Cognition

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Abstract

Differences in quickness of reaction and reaction time, categories and complexity of reactions, and attributions were investigated among secondary school teachers who varied in experience. Via a HyperCard program 25 inexperienced teachers and 24 experienced teachers were asked to react and attribute to videotaped simulated situations referring to classroom discipline and instructional problems. This study clearly illustrates that experienced teachers' reactions are characterized by more complexity than inexperienced teachers' reactions. The data suggest that as compared to inexperienced teachers, experienced teachers produce more reaction-intentions. As a consequence they need more reaction time than inexperienced teachers. In contrast to other studies in this area, however, both groups of teachers show no differences in their range of reactions. Experienced as well as inexperienced teachers seem to react in a confrontive, friendly-directive or understanding-permissive way. Besides, the data suggest that experienced teachers react in a more avoidant way than inexperienced teachers; this result, however, is not-significant. Finally, attributional differences of teachers appear to be related to situational cues, rather than to teachers' experience. The results are discussed in terms of implications for further research and teacher training.

Inexperienced and Experienced Teachers' Differences in Reacting and Attributing to Problematic Classroom Situations

Introduction

During the last decade, school effectiveness has become an issue of major importance. Teacher educational leadership, an orderly school climate, well described objectives, high expectancies of learning outcomes, and quality of teachers' reactions, all contribute to learning outcome (Hopkins, 1987). Wubbels, Créton, and Holvast (1988) suggest that teachers are supposed to have sufficient instructional and social skills to create a climate in which students can spend sufficient time on their tasks. Creating such a climate seems to depend on successfully managing problematic classroom situations, for example, students disruptive behavior during a lesson. Expert and novice teachers appear to differ in the way they solve classroom discipline problems. Swanson, O'Connor and Cooney (1990) report that novice teachers tend to react in a not highly directive and obtrusive way. They appear to be tolerant, discuss with students, and share responsibility. By contrast, expert teachers tend to react in a confrontive and directive way. When necessary, they insist upon appropriate behavior of students by punishing the students, using timeout procedures, or redirecting the attention of the class. These differences in reactions seem to be guided by the way both groups of teachers perceive classroom events. Expert teachers perceptions appear to be more complex, whereas novice teachers tend to perceive these events in a more superficial, descriptive way (Sabers, Cushing & Berliner, 1991; Swanson, O'Connor & Cooney, 1990).

Applied to the teacher educational field studying the relationship between teachers' experience and their perceptions and reactions in problematic classroom situations might have implications for the focus of teachers' training programs. This study might help teachers' educators more adequately to assess the effect of their programs in developing teachers who start better prepared with respect to managing problematic classroom situations.

Theoretical Perspective

The general purpose of this study is to determine the relations between teachers' experience and their perceptions and reactions in problematic classroom situations. Fuller (1969) and Peters (1985) report that many problems of teachers are related to instructional difficulties and disruptive behavior of students. Teaching can be conceived of as an intentional, conscious and reflective activity (Thomas, 1990). In this study teachers' activities refer to their reactions in problematic classroom situations. Student or classroom behavior which cannot be tolerated will force teachers to reflect on their own actions. Presumably, they will consider alternative actions and finally choose the most appropriate one (see the teacher decision model of Shavelson & Stern, 1981). Based on studies of Den Hertog (1990), Folkman and Lazarus (1985), and Wubbels, Créton and Holvast (1988), the range of reactions used here refer to the following exclusive and exhaustive categories: confrontive reactions; friendly-directive reactions; understanding-permissive reactions; dissatisfied reactions; avoiding reactions; organizing reactions; and undefined responses. In the first two categories emphasis is laid on interfering and active reactions of teachers. Tolerance and cooperation with students pertain to the category of understanding-permissive reactions. Passivity and avoidance of problem solving are related to the category avoiding reactions, whereas discontented and frustrated actions are assigned to the category dissatisfied reactions. Reactions that are characterized by asking others for help or advice, refer to the category organizing reactions.

Thought processes underlying teachers' reactions seems to be guided by the way teachers select, order, perceive and interpret classroom information. In this study it is assumed that teachers' understanding of classroom situations is influenced by their experience and attributions. Compared to novice teachers, expert teachers' perceptions seem to be more complex (see Clark & Peterson, 1986). They tend to make more inferences, assumptions, hypotheses and predictions ("if-then" statements) about classroom phenomena, whereas novice teachers tend to perceive these phenomena in a more superficial, descriptive way (Sabers, Cushing & Berliner, 1991; Swanson, O'Connor & Cooney, 1990). Differences in perceiving classroom situations seem to influence the time expert and novice teachers take to solve classroom problems (Berliner, 1989). When reading through scenarios concerning gifted pupils expert teachers take longer time to examine the scenarios, to build a problem representation and to reflect on their first strategies before they begin to write down problem solving strategies (Nelson, 1988). Dunn et al. (1987) report that differences in Interpretative competencies are related to the way both groups of teachers anticipate students' behavior during their lessons. Compared to novice teachers, expert teachers appear to be better at predicting students' behavior. As stated before, these differences in perceptions may affect the way teachers react in classroom situations. Sprinthall and Thies-Sprinthall (1983) more specifically suggest that teachers' perceptions can be conceived of as antecedents of their reactions. This leads to the notion that perceptions which are characterized by complexity may bring about the same type of actions. Fogarty, Wang and Creek (1983) suggest that students' cues elicit more detailed reactions produced by expert teachers than by novice teachers. Besides, expert and novice teachers' range of reactions seem to differ. Novice teachers tend to be more cooperative and tolerant towards students' disruptive behavior. Expert teachers, on the other hand, are often more directive: when necessary, they insist upon appropriate behavior of students (Swanson, O'Connor & Cooney, 1990).

The above differences in perceptions may also be expressed in the way expert and novice teachers attribute their reactions. Weiner (1986) reports that failure, unexpected or important events elicit attributions. Problematic classroom situations may be conceived of as important events, because dealing with them effectively seems to be related to teachers' personal teaching efficacy, that is teachers' believe in their ability to have a positive effect on the learning outcomes of students (Gibson & Dembo, 1984; Woolfolk, Rosoff & Hoy, 1990). Research focused on attributions, however, has remained quite separate from research on teachers' cognitions (Thomas, 1990). More explicitly, attribution research has hardly addressed relationships between teachers' attributions and their reactions (Den Hertog, 1990). This study intends to provide an integrative framework by examining both the attributional process of expert and novice teachers and their reactions, when they are confronted with problematic classroom situations. Concerning the relationship between teachers' reactions and attributions, Den Hertog (1990) conducted a paper-and-pencil experiment and found that confrontive reactions are related to external causal ascriptions, friendly-directive reactions and understanding-permissive reactions to causal ascriptions which are perceived as internal and controllable, and avoiding reactions to causal ascriptions which are perceived as uncontrollable. Applied to expert and novice teachers' differences in solving classroom discipline problems, expert teachers are assumed to attribute more controllably than novice teachers. By contrast novice teachers are supposed to attribute in a more internal way than expert teachers.

There is, however, one important limitation with respect to studies on expert and novice teachers' differences: several of these studies fail to describe the concept experience concisely (Boei & Kieviet, 1989). Berliner (1986) pointed at the difficulty in distinguishing between teachers' experience (routinization) and expertise (competence). Referring to Berliner's stage theory (1988) an inexperienced group of teachers can include a number of novice teachers and advanced beginners,

and an experienced group can be made up by competent, proficient and expert teachers. Berliner (ibid) argued that expertise cannot be conceived of as similar to experience and he supposed that teachers' experience is a necessary but not sufficient condition for the acquisition of expertise. In this study the terms experience and expertise are used interchangeably. Applied to research on teachers' cognitions the concept expertise can be associated with teachers' personal teaching efficacy. For, Greene, Anderson and Loewen (1986) report that teachers' differences in personal teaching efficacy are related to differences in achievements of students. Hence, the question arises whether the above findings and notions on expert and novice differences can be applied to teachers who vary in experience, when differences concerning personal teaching efficacy are eliminated. As a consequence, in this study the following questions are addressed: (a) Are there differences in categories of reactions between experienced and inexperienced teachers, when differences concerning personal teaching efficacy are eliminated?; (b) Are there differences between experienced and inexperienced teachers in quickness of reaction and reaction time, when differences concerning personal teaching efficacy are eliminated?; (c) Are there differences in the way experienced and inexperienced teachers perceive problematic classroom situations, when differences concerning personal teaching efficacy are eliminated? Four expectations based on the afore mentioned theoretical perspective are formulated. When confronted with problematic classroom situations: (1) experienced teachers will produce more confrontive and friendly-directive reactions than inexperienced teachers; (2) the experienced teachers' quickness of reaction will be slower and their reaction time will be longer than those of inexperienced teachers; (3) experienced teachers will produce reactions which are characterized by more explanations, "if-then" statements, and solutions than inexperienced teachers; (4) experienced teachers will attribute in a more controllable way than inexperienced teachers, whereas inexperienced teachers will attribute more dispositionally than experienced teachers.

Method

Subjects

Subjects were 49 teachers from the South-East of the Netherlands: 25 inexperienced teachers with 0 to 3 years of practice and 24 experienced teachers with more than 5 years of practice. Table 1 shows in which way inexperienced and experienced teachers were distributed along gender, age, practice, subjects, and working hours.

Insert Table 1 about here

The teachers were randomly chosen from a list of names provided by schools which agreed to participate in this study:

Materials and Tests

Videotaped simulated problematic classroom situations (Den Hertog, 1990), a checklist of twelve causal ascriptions and two dimensions (ibid), the Emotional Stress Reaction Questionnaire ("ESRQ") (Larsson, Kempe & Starrin, 1988), and the questionnaire "Sense of Self-Efficacy" (Den Hertog, 1990) were used. Teachers' reactions were measured by showing them five videotaped situations. Each situation consists of three parts: 1) the history of the event, 2) the sequence of courses of action, which leads to 3) an incident, an interaction problem between a teacher and his opponent(s) (Den Hertog, 1990). Besides, as in natural settings, in each situation several cues are hidden on which teachers can focus their attention. A number of these cues refer to teachers' causes and several

others to students' causes or circumstances (see below for a description of these types of causes). The videotaped situations refer to settings dealing with instructional difficulties of teachers (that is seventh-grade students who fail to understand the instruction ("instruction"), and to settings dealing with disruptive behavior of students (that is mess in the great hall ("mess"), eleventh-grade students who have not done their homework ("homework"), tenth-grade students who refuse to do an assignment ("assignment"), and a talkative student ("talkative student") (cf Table 2) (Korevaar, in preparation).

Insert Table 2 about here

Through the open ended question: "Which action do you take?" teachers' reactions¹ were elicited; these reactions were audiotaped. Teachers' quickness of reaction and their reaction time were measured via HyperCard tools (see the section Procedure).

Teachers' attributions were assessed by determining their causal ascriptions and dimensions. The causal ascriptions refer to a checklist of 12 Likert-type items (cf Tabel 3).

Insert Table 3 about here

Based on principal component analysis these causal ascriptions could be categorized into three types, that is teachers' causes (items 1, 3, 5, 11; with Cronbach's alpha coefficients (α) varying from .73 to .87), students' causes (items 4, 7, 9; with α varying from .57 to .82), and circumstances (items 2, 6, 8, 10, 12; with α varying from .45 to .71) (Den Hertog, 1990). The locus dimension was presented by two Likert-type items: "My behavior is produced by a cause that has to do with me", and "... a cause that is located in the situation". The controllability dimension was measured by two Likert-type items: "...a cause that I can control", and "...a cause that I cannot influence". Teachers' appraisals of the situations were measured via the "ESRQ". This questionnaire consists of 18 Likert-type items which are intended to reflect four appraisals, that is benign-positive, challenge, harm/threat and indifference.

Teachers' personal teaching efficacy was assessed by using the questionnaire "Sense of Efficacy". This questionnaire consists of 13 Likert-type items which are dealing with the judgment of teachers of their abilities in influencing students' behavior.

Procedure

In a controlled session teachers' reactions, attributions, appraisals, and personal teaching efficacy were assessed via the HyperCard Stack "Teachers' Reactions" (Apple Macintosh LC) (Van Eekelen & Korevaar, 1991). During this session that took about two hours, each single participant was shown five videotaped problematic classroom situations, counterbalanced for order of presentation. The teachers were instructed to respond to items assessing the afore mentioned variables. When requested, the experimenter in the room gave standardized feedback about unclear items or instructions.

At the beginning of the session the teachers were trained to get used to several features of the computer, the mouse and the HyperCard Stack "Teachers' Reactions". First, the functions of the mouse, several forms of buttons and instructions were explained. Next, the teachers were trained in moving the pointer of the mouse atop the buttons, in clicking on buttons, and getting accustomed to several buttons' actions. Thereafter, the topic of research was introduced:

¹ In this study the reactions of teachers should be conceived of as intentions, because teachers' reactions are not observed.

"You are going to see five different classroom situations. These situations are videotaped. One situation refers to instructing students. The other situations pertain to the behavior of students. You may recognize these situations and think they are representative of your own teaching practice. But ... when you are watching these situations, you may also realize that your own teaching practice differs widely from the videotaped situations. Perhaps you will think that such situations will never happen to you or that you, as compared to the videotaped teacher, will react in a different way. We ask you, however, to ignore these understandable thoughts. Regarding the purpose of this study it is important that you take the perspective of the videotaped teacher. While watching the videotaped situation, you will be asked to assume the role of the videotaped teacher. You are involved in the situation. You have to put yourself in the videotaped teachers' shoes and try to get a sense of what the teacher experiences in the situation".

The teachers were trained to get accustomed to their roles by providing them with an example of a videotaped situation. After having watched the example-situation concerning a bright student the pressure of everyday teaching was simulated: as in real life settings teachers were prompted to decide as soon as possible which action they would take to solve the problematic situation. The teachers were instructed to talk directly to the videotaped students and the experimenter gave them standardized feedback when their reactions contain postponed elements (e.g. "I will talk with the students after class"), statements of possibility (e.g. "I would like to do this or that"), or explanations given to the experimenter. When this procedure was automatized sufficiently, the experimenter started the videotaped situations by pressing the play button of the video remote control. At the end of each situation the following procedure was completed. The experimenter pressed the pause button of the video remote control, while the teachers went to the next card of the HyperCard Stack by clicking on a button. Next, they responded to the question: "Which action do you take?" Their reactions were audiotaped. As soon as the teachers started to react the experimenter pressed a keyboard's key which was meant to assess the teachers' quickness of reaction. After the teachers had reacted they clicked on a special button which measured their reaction time. Then, they were shown the list of 12 causal ascriptions, the items of which were presented sequentially (cf Figure 1). They were asked to indicate the perceived influence of each of these causal ascriptions on their reactions by rating them on a 5-point Likert scale, ranging from very unimportant to very important.

Insert Figure 1 about here

When requested, the experimenter provide the teachers with standard examples of the predefined causal ascriptions. Besides, the teachers were prompted to choose from the checklist two of the most important causal ascriptions. Via a 5-point Likert scale they rated the selected causal ascriptions on the locus and controllability dimensions. Thereafter the teachers were prompted to fill out the "ESRQ", the items of which were presented sequentially. Finally, after having watched all situations, the teachers were asked to fill out the questionnaire "Sense of Self-Efficacy", the items of which were presented in the same way.

Recording

Via the HyperCard program teachers' scores of causal ascriptions, causal dimensions, appraisals, and personal teaching efficacy were stored in the computer. The audiotaped reactions of the teachers were recorded in writing by two raters (see appendix A). Three raters divided independently these written reactions in units, based on syntax (see appendix B). On recognizing the complexity of the teachers' reactions, the raters classified each unit as a reaction-intention, an explanation or an "if-then" statement. Reaction-intentions refer to the verbal statements of teachers consisting of intended short-term actions. Explanations are conceived of as teachers' causal attributions, their legitimations and reflections on a situation. "If-then" statements pertain to teachers' predictions of students' behavior. Finally, the raters assigned each unit classified as a reaction-intention to the following exhaustive and

exclusive categories: confrontive, friendly-directive, understanding-permissive, dissatisfied, avoiding, and organizing reactions and undefined responses.

Table 4 shows an example of the way the three raters have unitized and categorized a reaction.

Insert Table 4 about here

Reliability

The reliability of the "Sense of Self-Efficacy" questionnaire and the "ESRQ" were assessed in previous research (Den Hertog, 1990; Larsson, Kempe & Starrin, 1988). With respect to the questionnaire "Sense of Self-Efficacy" internal consistency as measured by Cronbach's alpha reached a satisfying 0.82. The test-retest reliability with a three month interval was estimated to be 0.70. The reliability of the "ESRQ" revealed reliability coefficients ranging from 0.66 to 0.81 and validity coefficients from 0.34 to 0.59. For three aspects of the recording of the audiotaped teachers' reactions, the intercoder agreement was calculated. For the identification of reaction-units three raters achieved 80% agreement. Only 71% of these units were recognized by three raters as a reaction-intention, 65% was classified as an explanation and 50% as an "if-then" statement. On categorizing the reaction-intentions the intercoder agreement was 75%. When the raters did not agree on their classifications, they discussed with each other until agreement was achieved.

Design

This study had a two-group design. Teachers' experience was conceived of as an independent variable with two levels. The dependent variables were teachers' reaction-categories, their number of reaction-units, explanations, "if-then" statements and reaction-intentions; teachers' causal ascriptions, and their scores on the locus and controllability dimensions. Teachers' reaction-categories were defined as the mode of reaction-categories per situation. The mode was used for analysis, because unitizing might imply that teachers had different numbers of categories per reaction (see the section Recording). Teachers' scores on the locus and controllability dimensions were determined by rating the two most important causal ascriptions on these dimensions. Using the scale midpoint 2.5 as reference teachers' causal ascriptions were assumed to be dispositional if their mean score across the five situations was higher than 2.5 on the items referring to teachers' causes, and/or their mean score was higher than 2.5 on the locus dimension. Using the scale midpoint 2.5 as reference the teachers' causal ascriptions were conceived to be situational if their mean score across the five situations was higher than this midpoint on the items referring to students' causes and circumstances, and/or their mean score was lower than 2.5 on the locus dimension. Using the scale midpoint 2.5 as reference teachers' attributions were assumed to be controllable if their mean score was higher than 2.5 on the controllability dimension, and uncontrollable if their mean score was lower than 2.5 on the controllability dimension.

To determine if differences between experienced and inexperienced teachers were due to situational cues, their scores on the dependent variables produced in the situation "instruction" were compared with the dependent variable scores produced in the situations which refer to disruptive behavior of students.

Results

Results from X^2 tests (two-tailed) indicate significant differences between experienced and inexperienced teachers on the variables age, X^2 (3, N = 49) = 16.30, p < .001; gender, X^2 (1, N = 49) = 9.09, p < .003; working hours X^2 (4, N = 49) = 11.78, p < .02; and grades to which they taught X^2 (2, N

$= 49) = 6.11, p < .05$. As compared to inexperienced teachers, the major part of experienced teachers appear to be made up by teachers who are male, are older than 40 years, have a fulltime job and teach their subject to senior-grade students. Experienced and inexperienced teachers, however, show no significant differences in the subject they taught. Further, both groups seem to evaluate these situations in the same way. They appear to perceive these situations as representative for their own teaching practice ($M = 3.86$ and $M = 3.95$, respectively), $t(47) = -.53, p = .60$. Besides, both experienced and inexperienced teachers tend to be not undifferent to these situations ($M = 1.65$ and $M = 1.72$, respectively); they seem to perceive these situations as not very positive ($M = 2.61$ and $M = 2.53$, respectively), challenging ($M = 3.68$ and $M = 3.61$, respectively), and slightly threatening ($M = 2.73$ and $M = 2.89$, respectively) events.

Table 5 presents the categories of reactions produced by experienced and inexperienced teachers

Insert Table 5 about here

Contrasted to our expectations, experienced and inexperienced teachers show no significant differences in the way they react to problematic classroom situations, $\chi^2(5, N = 242) = 6.86, p = .23$. Both groups appear to react in a mainly confrontive and friendly-directive way. Remarkably, experienced teachers tend to react in a more avoidant way than inexperienced teachers. This non-significant difference appears to occur mainly in the situation "homework".

The mean scores on quickness of reaction and reaction time of experienced and inexperienced teachers are shown in Table 6.

Insert Table 6 about here

The results from the above t tests (one-tailed) indicate that compared to inexperienced teachers, the reaction time of experienced teachers is significant longer. In contrast to findings of several expert-novice studies, however, experienced teachers tend to start producing their reactions quicker than inexperienced teachers. This difference, however, is not significant. A MANOVA with one between-subjects factor "experience" at two levels and personal teaching efficacy as covariate was run for the dependent variables quickness of reaction and reaction time, using a significance level of .05. The MANOVA results showed almost significant experience effects, $F(2,43) = 3.04, p = .06$. Because the contribution of the covariate "personal teaching efficacy" was rather low, this covariate was not retained in further analyses. To determine if the reaction time and quickness of reactions of experienced and inexperienced teachers changed per situation, a MANOVA with the between-subjects factor "experience" and the five situations as within-subjects factor was run for each of the dependent variables separately, using simple contrasts (the situation "instruction" was used as the reference category). Only with respect to reaction time the scores of inexperienced and experienced teachers show significant changes per situation, $F(4,16) = 10.87, p = .00$.

The mean number of reaction units, explanations, "if-then" statements, and reaction-intentions, produced by experienced and inexperienced teachers are shown in Table 7.

Insert Table 7 about here

The results from the above t tests (one-tailed) indicate that experienced as well as inexperienced teachers tend to produce an almost equal number of reaction-units, explanations and "if-then"

statements. Experienced teachers, however, appear to produce more reaction-intentions than inexperienced teachers. A MANOVA with one between-subjects factor "experience" at two levels and personal teaching efficacy as covariate was run for the dependent variables reaction-units, explanations, "if-then" statements, and reaction-intentions using a significance level of .05. The MANOVA results showed no significant experience effects, $F(4,43) = 1.00$, $p = .42$. Because the contribution of the covariate "personal teaching efficacy" was rather low, this covariate was not retained in further analyses. To determine if the scores on the afore mentioned dependent variables changed per situation, a MANOVA with the between-subjects factor "experience" and the five situations as within-subjects factor was run for each of the dependent variables separately, using simple contrasts (the situation "instruction" was used as the reference category). Table 8 presents the mean scores on the dependent variables reaction-units, explanations, "if-then" statements and reaction-intentions. The results of the significance tests for the within-subjects design are shown in Table 9.

Insert Table 8 about here

Insert Table 9 about here

This repeated measure analysis revealed significant situations' effects for the dependent variables number of reaction-units, explanations and reaction-intentions. Using the situation "instruction" as reference, teachers tend to produce a smaller number of reaction-intentions and a larger number of explanations in the other four situations. Further, in the situations "mess" and "talkative student" teachers tend to produce a smaller number of reaction-units, while they appear to produce more reaction-units in the situations "assignment" and "homework".

Contrasted to our expectations results from t tests (one-tailed) indicate no significant differences in the way experienced and inexperienced teachers attribute their reactions. Both groups of teachers seem to perceive not only students' causes but also teachers' causes and circumstances as important for their reactions. Besides, experienced as well as inexperienced teachers tend to perceive their most important causal ascriptions underlying their reactions as internal and highly controllable. A MANOVA with one between-subjects factor "experience" at two levels and personal teaching efficacy as covariate was run for the dependent variables, using a significance level of .05. The MANOVA results showed no significant experience effects, $F(5,42) = 1.03$, $p = .413$. Because the contribution of the covariate "personal teaching efficacy" was rather low, this covariate was not retained in further analyses. To determine if the scores on the afore mentioned dependent variables changed per situation, a MANOVA with the between-subjects factor "experience" and the five situations as within-subjects factor was run for each of the dependent variables separately, using simple contrasts (the situation "instruction" was used as the reference category). Table 10 presents the mean scores on the dependent variables teachers' causes, students' causes and circumstances and the locus and controllability dimension. The results of the significance tests for the within-subjects design are shown in Table 11.

Insert Table 10 about here

Insert Table 11 about here

First, this analysis revealed a significant interaction effect between the factors "experience" and "situation" for the dependent variable controllability. Contrasted to our expectations, in the situation "instruction", "talkative student" and "assignment" inexperienced teachers tend to perceive the causal ascriptions underlying their reactions as more controllable than experienced teachers, whereas this asymmetry is reversed in the other two situations. Further, this repeated measure analysis revealed significant situation effects for all the dependent variables. Using the situation "instruction" as reference, teachers tend to ascribe less importance to teachers' causes and students' causes in the other four situations. Moreover, teachers appear to ascribe the same importance to circumstances in the situation "assignment" and "homework", while they seem to perceive these ascriptions as less important for their reactions in the situation "mess" and "talkative student". Finally, in these last two situations teachers appear to rate their most important causal ascriptions in the same way or lower on the dimensions locus and controllability than in the situation "instruction", whereas in the situation "assignment" and "homework" they tend to rate their ascriptions higher on these dimensions.

Discussion

This study clearly illustrates that experienced teachers' reactions are characterized by more complexity than inexperienced teachers' reactions. The data suggest that as compared to inexperienced teachers, experienced teachers tend to produce more reaction-intentions. As a consequence they need more reaction time than inexperienced teachers. In contrast to previous findings of expert and novice studies, however, both groups of teachers show no differences in their range of reactions. Experienced as well as inexperienced teachers seem to react in a confrontive, friendly-directive or understanding-permissive way. Moreover, the data suggest that experienced teachers react in a more avoidant way than inexperienced teachers; this result, however, is not-significant. Finally, attributional differences of teachers appear to be related to situational cues, rather than to teachers' experience.

Differences in complexity and reaction time expressed in the number of reaction-intentions, may be due to the way experienced and inexperienced teachers store information. The videotaped situations refer to daily problematic classroom events. Experienced as well as inexperienced teachers evaluate these events as representative for their own teaching practice. Because experienced teachers have had the opportunity to develop more complex schemata of classroom events than inexperienced teachers (Sabers, Cushing & Berliner, 1991), they may compare the videotaped situations earlier and easily with their own practice. In other words, while watching these situations they immediately start to impose meaning and structure on the videotaped interactions. Hence they will reflect on their strategies before they are prompted to produce reactions. By contrast, inexperienced teachers who have developed lesser complex schemata, are mainly preoccupied and concentrated on understanding and grasping the meaning of the videotaped situations. As a consequence, only after the situations are displayed, they are able to reflect on their strategies. Secondly, the way teachers' reactions are elicited may be responsible for the lack of differences in number of explanations and "if-then" statements provided by experienced and inexperienced teachers. By asking the question: "Which action do you take?" the output of teachers' reactions is emphasized. Teachers are prompted to react directly; they have to formulate which actions they will take in situations referring to problematic interactions between a teacher and his students. This may imply that experienced as well as inexperienced teachers are stimulated to be clear to students and provide specific actions which may be directed at understanding, motivating, punishing or ignoring the behavior of students. Therefore

they will explain their reactions to a certain extent, but they will stick to the present and not enlarge their actions by predicting the behavior of students as a consequence.

With respect to teacher training, microteaching via stimulated recall may be a good opportunity for inexperienced teachers to practise problem solving strategies. As stated in previous research (Korevaar, 1990), this group of teachers has to be stimulated to take time for solving problematic situations. They have to learn to pick up relevant cues hidden in a situation and while watching these situations reflect on several strategies before they decide how to react.

The non-significant differences between inexperienced and experienced teachers' range of reaction-categories may be caused by the presence of an experimenter. This may imply that especially inexperienced teachers tend to react in a social desirable way. They may like to give the impression that they can handle these situations. For in general, teachers who take responsibility for their actions, show leadership, and appear to be friendly and cooperative are conceived of as having more expertise than teachers who are dissatisfied, grumble at students, avoid interaction with them and ignore their behavior (Brekelmans, Wubbels & Créton, 1989). The above is confirmed by statements of inexperienced teachers who participated in this study. Several teachers who were in their second year of practice, spontaneously told that lack of experience might have been a hindrance to participate in this study: if they had been in their first year of practice, then they would not have agreed to participate. For, during that period their main concern was how to survive in the classroom and as a result they were hardly able to formulate their strategies. By contrast, experienced teachers are in a lesser way compelled to settle good impressions. This leads to the notion that when necessary they show less social desirable behavior, for example avoidant reactions.

There are several possible explanations for the lack of differences between inexperienced and experienced teachers' attributions. Firstly, not only the group of inexperienced but also the group of experienced teachers consist of teachers who vary in routine and perhaps even expertise. As stated before, the group of inexperienced teachers may include novice teachers and advanced beginners, the experienced group may consist of competent, proficient or even expert teachers. This leads to the notion that when differences between both groups of teachers are maximized, for instance the inexperienced group of teachers is represented by novice teachers and the experienced group by proficient or expert teachers, differences in attributions might have been occurred. On the other hand, however, a study of Clarridge and Berliner (1990) indicate that even well described groups of teachers show no differences in attributions of students' behavior. Secondly, in this study the causal ascriptions and dimensions of teachers are related to their reactions and not to the outcome of their reactions. Weiner (1979), however, defines a causal ascription as the answer to a why question regarding an outcome. This definition focuses on causes which account for the relation between an action and an outcome, that is success or failure. In this study teachers are prompted to take actions and to indicate the causal ascriptions and dimensions of their actions. Because the consequences of their reactions are not displayed (for instance, their reactions may bring about that students are willing to cooperate or are showing even more disruptive behavior), it remains unknown if teachers succeed or fail in managing the problematic situations. Because both groups of teachers appear to differ not significantly in their range of reactions and experienced teachers are assumed to have more success in managing these daily problematic situations (Fuller, 1969), relating attributions to the outcomes of teachers' actions might have elicited more differences in attributions.

The significant findings of attributional differences on situational level imply that situational cues have to be conceived of as relevant stimulus material. Because the videotaped situations are displayed in an ambiguous way, that is several cues are hidden in these situations, future research is

necessary on how teachers' causal ascriptions and dimensions are influenced by characteristics of problematic classroom situations.

Summarized, this study has contributed to our knowledge of the way experienced and inexperienced teachers perceive and react in problematic classroom situations. By using a more well described group of inexperienced teachers and experienced teachers (for instance, only teachers who are in their first year of practice and teachers with more than eight years of experience, respectively), observing them in real life settings or via stimulated recall the presented limitations of this study may be overcome. At present, we are involved in a study determining the influence of teachers' perspective on their attributions in problematic classroom situations.

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Table 1
Number of Inexperienced and Experienced Teachers per Gender, Age, Years
of Practice, Grades taught, Subjects taught, and Working Hours

		Teachers			
		Inexperienced (n=25)		Experienced (n=24)	
Gender	Male	n	%	n	%
	Female	8	32.0	18	75
Age	<25	17	68.0	6	25
	25 - 39				
	40 - 54	3	12.0	13	54.2
	> 55	22	88.0	9	37.5
Years of Practice	0 - 1			2	8.3
	1 - 2	10	40.0		
	2 - 3	13	52.0		
	3 - 8	2	8.0	5	20.8
	8 - 16			13	54.2
	> 16			6	25.0
Grades	junior high	10	40.0	5	20.8
	senior high	6	24.0	2	8.3
	junior and senior high	9	36.0	17	70.8
Subjects	language	12	48.0	10	41.7
	science	7	28.0	10	41.7
	social science	6	24.0	2	8.3
	undefined			2	8.3
Working Hours	1 - 9	5	20.0	2	8.3
	10 - 17	7	28.0	1	4.2
	18 - 25	9	36.0	7	29.2
	26 - 29	4	16.0	13	54.2
	> 30			1	4.2

Table 2

The video-scenario of the problematic classroom situation "a talkative student".

(Scene in the classroom)

(Voice-over of John:) One of my students is very talkative. Lately, it seems as if she becomes even more fidgety. She is continuously talking with her class-mate. Her behavior disturbs my teaching.

(John is talking to his class) "We are going to use a real scheme.... (John looks at Mary, who is talking to her class-mate, and he repeats) to use a real scheme. Eric, put it on the black-board."

(Scene after class)

(Voice-over of John:) Last week I had an appointment with her. I made clear to her that attending my lessons implies no talking. She promised to do her best.

(Scene during a meeting with John and his colleagues concerning the behavior of several students)

(John says:) "Mary is continuously talking with her class-mate. Yesterday I had difficulties with her. I talked to her after the lesson. Sometimes she is very disturbing."

(Teacher 2 asks:) "Are there more of you having the same experiences?"

(Teacher 3 reacts:) "To be honest, Mary is not talkative at all during my lessons. She behaves quite normally. Unlike John, I have seen no disruptive behavior."

(Teacher 2 asks:) "And the others; is Mary talkative during your lessons?"

(Teacher 4 says:) "Certainly, I do understand John. There are a few problems at the girl's home. I can imagine that she is trying to put the problems out of her head. As a consequence she may be rather noisy. But, if you do not mind, I do not want to give any more details. I only think you have to know that the staff is working on it."

(Teacher 2 says:) "All right, we continue with Ann"

(Scene in the classroom)

(John explains to his students:) "...1870, there is not one united German state, but rather a few small states. A kind of collection of separate states. In 1871 Bismarck finally succeeds in founding a German (John waits a few seconds, because Mary is talking to her class-mate)... a German (John looks at Mary, when she catches his eyes, he emphasizes) the German Empire, (then he talks again to the entire class:) this event took place after the French-German war, when all German princes fought against France."

(John gives an assignment to the entire class:) "The questions of section two, the numbers "a" through "g". You have to do this instead of answering the questions in the book. So, you do not have to learn or to answer the questions in the book. No, not the questions in the book, but only the questions of the stencil. They are substituting the questions recorded in the book."

(John warns Mary, who again is talking with her class-mate) "Mary, have you taken notice of what I just have told? It is important, because otherwise you might do the wrong task. So, you do not have to pay attention to the questions in the book, but rather to the questions of the stencil. I advise you to start immediately answering these questions. I consider this task as homework for the next week."

(A few moments later Mary starts talking again).

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Table 3

Checklist of 12 Causal Ascriptions Underlying Teachers' Reactions.

-
1. My capacities, my functioning as a teacher
 2. The number of students
 3. My relationship with the students
 4. The motivation and effort of the students
 5. My character / my state of mind
 6. Cooperation, management, rules and organisation of the school
 7. The capacities / the abilities of the students
 8. The attitude of the other students
 9. The state of mind / the character of these students
 10. The personal circumstances of these students
 11. My approach in the situation
 12. Features of the subject
-

Table 4
An Example of the Way a Teachers' Reaction is recorded

Situation:

"Assignment"

Reaction:

"It is a part of life that you have to do things you do not really like. That is how it is. So if you take utopism: a situation in which you are perfectly happy and in which everyone can do what he likes and can choose how his world will be. So choose the last but one of this list."

Unitizing:

- (1) It is
- (2) So be
- (3) So choose

Complexity

- (1) Explanation
- (2) Reaction-intention
- (3) Reaction-intention

Categorization:

- (2) Friendly-directive
 - (3) Friendly-directive
-

Table 5

Categories of Reactions Produced by Experienced and Inexperienced teachers across Five Situations.

Reaction-Categories (N=242)		Reaction-Categories					
		CR*	FDR	UPR	DIS	AV	OR
Experienced (n = 120)	n	33	35	32	2	18	0
	%	13.6	14.5	13.2	1.7	7.4	0
Inexperienced (n=125)	n	40	32	40	1	8	1
	%	16.5	13.2	16.5	0.8	3.3	0.4

* CR=Confrontive Reactions; FDR=Friendly-Directive Reactions; UPR=Understanding-Permissive Reactions; DIS=Dissatisfied Reactions; AV=Avoiding Reactions; OR=Organizing Reactions.

Table 6
Mean Scores on Quickness of Reaction and Reaction Time Produced by Experienced and Inexperienced Teachers

Time*	Teachers				
	Experienced (n=23)		Inexperienced (n=24)		t
	M	SD	M	SD	
Quickness	8.50	5.26	10.52	7.09	1.12
Reaction Time	23.97	11.87	17.48	8.04	-2.19**

* the time is measured in seconds

** $p < .05$

Table 7

Mean and Standard Deviation of Number of Reaction-Units, Explanations, "If-Then" Statements and Reaction-Intentions Produced by Experienced and Inexperienced Teachers.

Reactions	Teachers				
	Experienced (n=24)		Inexperienced (n=25)		t
	M	SD	M	SD	
Units*	3.97	1.59	3.33	1.24	-1.57
Expl	1.57	.84	1.36	.92	-.79
IF	.14	.24	.16	.29	.24
RI	2.25	.88	1.77	.56	-2.30**

* Units=reaction-units; Expl=explanation; IF="if-then statements; RI=reaction-intention

** $p < .05$

Table 8

Mean Scores on the Dependent Variables Reaction-Units, Explanations, "If-Then" Statements, and Reaction-Intention per Situation produced by Experienced and Inexperienced Teachers and the Entire Sample.

Teachers															
Situations*	Experienced (n=24)					Inexperienced (n=25)					Entire Sample (N=49)				
	1	2	3	4	5*	1	2	3	4	5	1	2	3	4	5
Complexity															
Units	3.04	4.13	5.33	3.58	3.75	3.16	3.36	4.32	2.64	3.16	3.10	3.73	4.81	3.10	3.45
Expl.	1.38	1.38	2.83	1.50	0.75	1.36	1.40	2.28	0.88	0.92	1.37	1.39	2.55	1.18	0.84
IF	.08	.08	0.25	.04	.25	.28	.16	.16	.16	.04	.18	.12	.20	.10	.14
RI	1.58	2.67	2.25	2.04	2.70	1.52	1.76	1.88	1.60	2.08	1.55	2.20	2.06	1.81	2.39

* Situation 1 refers to "mess", situation 2 to "assignment", situation 3 to "homework", situation 4 to "talkative student", situation 5 to "instruction".

Table 9

Multivariate Analysis of Variance of the Repeated Measures Factor "Situation" and the Between Factor "Experience" (by using simple contrasts) for the Variables Reaction-Units, Explanations, "If-Then" Statements, and Reaction-Intention

	Source			
	Situation		Perspective x Situation	
	Pillai's statistic	P	Pillai's statistic	P
Complexity				
Unit	.45	.00	.10	.34
Expl	.44	.00	.06	.43
IF	.03	.89	.10	.31
RI	.33	.001	.11	.27

Table 10

Mean Scores on the Dependent Variables per Situation produced by Experienced and Inexperienced Teachers and the Entire Sample.

Situations*	Teacher														
	Experienced					Inexperienced					Entire Sample				
	(n=24)					(n=25)					(N=49)				
	1	2	3	4	5*	1	2	3	4	5	1	2	3	4	5
Causal Ascriptions and Dimensions															
TC**	3.76	3.99	3.90	3.98	4.10	3.56	3.94	3.86	3.97	4.03	3.66	3.96	3.88	3.97	4.07
SC	2.61	3.75	3.77	3.47	4.08	2.81	3.55	3.97	3.40	4.15	2.71	3.65	3.88	3.44	4.12
Cir	2.86	3.03	3.07	2.87	3.12	2.87	3.14	3.16	2.89	3.08	2.87	3.09	3.11	2.88	3.10
Locus	3.80	3.62	3.73	3.34	3.24	3.26	3.68	3.75	3.44	3.44	3.53	3.65	3.74	3.39	3.38
Contr	3.74	3.82	3.93	3.56	3.51	3.61	3.95	3.78	3.79	3.85	3.67	3.89	3.85	3.68	3.68

* Situation 1 refers to "mess", situation 2 to "assignment", situation 3 to "homework", situation 4 to "talkative student", situation 5 to "instruction".

** T C = teachers' causes; S C = students' causes; Cir = circumstances; Contr = controllability

Table 11
Multivariate Analysis of Variance of the Repeated Measures Factor "Situation" and
the Between Factor "Experience" (by using simple contrasts) for the Variables
Causal Ascriptions and Locus Dimension.

	Source			
	Situation		Perspective x Situation	
	Pillai's statistic	P	Pillai's statistic	P
Causal Ascriptions and Dimensions				
Teachers' Causes	.36	.00	.03	.86
Students' Causes	.81	.00	.19	.06
Circumstances	.35	.001	.02	.90
Locus	.35	.001	.16	.101
Controllability	.31	.002	.21	.03

Figure caption

Figure 1. An Example of a Card of the HyperCard Stack "Teachers' Reactions".

Below are statements which refer to causal ascriptions.
We ask you to fill out to which extent each item is related to the
behavior you mentioned afore.

My capacities, my functioning as a teacher.



Click on one of these answers

- | | | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| very | unimportant | not important | important | very |
| unimportant | | but also not | | important |
| | | unimportant | | |

Click on O.K. after your answer!

O.K.

Appendix A

Overview of Decision Rules with respect to Recording the Teachers' Reactions in Problematic Classroom Situations.

Generally the subjects' formulations have to be literally recorded.

Exceptions, however, are that

1. the recorded formulations have to be grammatically correct;
 2. the subjects' formulations have to be recorded in the present tense;
 3. the subjects' formulations have to be recorded in direct speech;
 4. explanations given to the experimenter have to be left out of the recording;
 5. comments on the videotaped situations (e.g. "I would not allow students to work in groups") have to be left out of the recording;
 6. possible reactions (e.g. "I will do this or that") have to be left out of the recording.
-

Appendix B

Overview of Decision Rules with respect to Utilizing the Teachers' Reactions in Problematic Classroom Situations.

-
1. Unitizing is independent of categorization.
 2. The punctuation mark "full-stop" implies the start of a new unit, except if the units before and after the "full stop" have the same meaning.
 3. The word "and" implies the start of a new unit. Exceptions are if: (a) "and" implies a goal, or (b) both units connected by "and" have the same meaning.
 4. Sometimes interpunction can refer to a goal. Hence, the following will be conceived of as one unit: "I ask her to stay here after the lesson; remind her of the appointment".
 5. "If-then" statements are conceived of as one unit.
Via such statements a teacher predicts students' behavior and his own actions as a consequence. These statements are characterized by conditional argumentation. The words "if" and "then", however, are not necessarily found literally in a unit. For example, the following statements are conceived of as an "if-then" statement: "If a student does not say anything, then I will punish him", and "Should a student say nothing, then I will punish him".

The above mentioned rules have a certain order, that is rule four and five are more important than rule two.

Rule five has a higher priority than rule two. This implies that when there is a full-stop in the "if-then" statement, this statement will be conceived of as one unit.

Rule four has a higher priority than rule two. Hence, the following is conceived of as one unit: "I ask her to stay after class. I then remind her of the appointment".

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